Claims

1. A satellite video on demand method using a satellite in earth orbit with at least one uplink and plural downlinks to plural cells distributed over a geographic region, the method comprising:

receiving at a control station plural requests for video files from plural users in plural cells in the geographic region, including first requests from plural first users in plural first cells for a first video file and second requests for one or more second video files from other users in one or more second cells;

accumulating the first requests over a first time period;

transmitting at least portions of the one or more second video files to the other users via the at least one uplink and one or more downlinks to the one or more second cells during the first time period; and

after the first time period, transmitting the first video file to the plural first users via the at least one uplink and plural simultaneous downlinks to the plural first cells.

2. The method of claim 1 in which the plural cells in the geographic region are arranged in an open array with interstices between the cells

3. The method of claim 1 further comprising transmitting the first video file as a first common downlink signal to the plural first cells so that the first common downlink signal between the cells in the first open array constructively interferes to deliver the first common downlink to the interstices.

4. The method of claim 1 in which the plural cells include plural third cells positioned in interstices between the plural first cells and the one or more second cells within the geographic region, the method further comprising repositioning the plural downlinks to direct them to the plural third cells after the first video file is transmitted to the plural first users.

5. The method of claim 4 in which the geographic region is a first geographic region and the plural cells include plural third cells positioned in second geographic region that is adjacent to and substantially non-overlapping with the first geographic region, the method further comprising further comprising

repositioning the plural downlinks to direct them to the plural third cells after the first video file is transmitted to the plural first users.

6. The method of claim 1 in which the geographic region is a first geographic region and the plural cells include plural third cells positioned in second geographic region that is adjacent to and substantially non-overlapping with the first geographic region, the method further comprising further comprising repositioning the plural downlinks to direct them to the plural third cells after the first video file is transmitted to the plural first users.

7. The method of claim 1 in which transmitting the one or more second video files to the other users includes transmitting a dedicated video file to only one user.

8. The method of claim 1 in which transmitting the one or more second video files to the other users includes transmitting one dedicated video file separately to each of plural users.

9. The method of claim 1 in which each cell is generally circular.

10. The method of claim 1 in which each cell includes plural lobes that extend from a central core.

11. The method of claim 1 in which the satellite is in a geosynchronous earth orbit.

12. A satellite video on demand queuing method for use with a satellite in earth orbit having at least one uplink and plural downlinks to plural cells distributed over a geographic region, the method comprising:

receiving at a control station plural requests for video files from plural users in plural cells in the geographic region, including first requests from plural first users in plural first cells for a first video file and second requests for one or more second video files from other users in one or more second cells;

accumulating the first requests over a first time period;

transmitting at least portions of the one or more second video files to the satellite via the at least one uplink during the first time period for delivery to the other users; and

after the first time period, transmitting the first video file to the satellite for simultaneous delivery to the plural first users.

13. The method of claim 12 in which transmitting the one or more second video files includes transmitting a dedicated video file for delivery to only one user.

14. The method of claim 12 in which transmitting the one or more second video files includes transmitting one dedicated video file to be delivered separately to each of plural users.

15. A computer-readable medium with satellite video on demand queuing software for use with a satellite in earth orbit having at least one uplink and plural downlinks to plural cells distributed over a geographic region, the medium comprising:

software for receiving at a control station plural requests for video files from plural users in plural cells in the geographic region, including first requests from plural first users in plural first cells for a first video file and second requests for one or more second video files from other users in one or more second cells;

software for accumulating the first requests over a first time period;

software for transmitting the one or more second video files to the satellite via the at least one uplink during the first time period for delivery to the other users; and

software for transmitting the first video file to the satellite after the first time period.

16. The medium of claim 15 in which the software for transmitting the one or more second video files includes software for transmitting a dedicated video file for delivery to only one user.

17. The medium of claim 15 in which the software for transmitting the one or more second video files includes software for transmitting one dedicated video file to be delivered separately to each of plural users.

18. A satellite video on demand method using a satellite in earth orbit having at least one uplink and plural downlinks to plural cells distributed over a geographic region, the method comprising:

directing plural first downlinks to the plural cells arranged in a first open array of spaced-apart cells with interstices therebetween, the first downlinks carrying a first common downlink signal to the cells in the first open array so that the first common downlink signal between the cells in the first open array constructively interferes to deliver the first common downlink to the interstices; and

directing plural second downlinks to the plural cells arranged in a second open array of spaced-apart cells with interstices therebetween, the cells in the second open array being in the interstices between the cells in the first open array, the second downlinks carrying a second common downlink signal to the cells in the first open array so that the second common downlink signal between cells constructively interferes to deliver the first common downlink to the interstices between the cells.

19. The method of claim 18 in which directing plural first downlinks to the plural cells arranged in a first open array of spaced-apart cells further comprises:

receiving at a control station plural requests for video files from plural users in plural cells in the first open array, including first requests from plural first users in plural first cells in the first open array for a first video file and second requests for one or more second video files from other users in one or more second cells in the first open array;

accumulating the first requests over a first time period;

transmitting at least portions of the one or more second video files to the other users via the at least one uplink and one or more downlinks to the one or more second cells during the first time period; and

after the first time period, transmitting the first video file to the plural first users via the at least one uplink and plural simultaneous downlinks to the plural first cells.

20. The method of claim 19 further comprising transmitting the first video file as a first common downlink signal to the plural first cells so that the first common downlink signal between the cells in the first open array constructively interferes to deliver the first common downlink to the interstices.

21. The method of claim 19 in which the plural cells include plural third cells positioned in interstices between the plural first cells and the one or more second cells within the geographic region, the method further comprising repositioning the plural downlinks to direct them to the plural third cells after the first video file is transmitted to the plural first users.

22. The method of claim 19 in which transmitting the one or more second video files to the other users includes transmitting a dedicated video file to only one user.

23. The method of claim 19 in which transmitting the one or more second video files to the other users includes transmitting one dedicated video file separately to each of plural users.

24. A satellite file-on-demand method using a satellite in earth orbit with at least one uplink and plural downlinks to plural cells distributed over a geographic region, the method comprising:

receiving at a control station plural requests for files from plural users in plural cells in the geographic region, including first requests from plural first users in plural first cells for a first file and second requests for one or more second files from other users in one or more second cells;

accumulating the first requests over a first time period;

transmitting at least portions of the one or more second files to the other users via the at least one uplink and one or more downlinks to the one or more second cells during the first time period; and

after the first time period, transmitting the first file to the plural first users via the at least one uplink and plural simultaneous downlinks to the plural first cells.